



Fish and Wildlife Benefits

260 acres of estuarine habitat

Estuaries are our most productive ecosystems

Salmon depend on
estuaries

Ducks prefer estuaries

Shorebirds depend on
estuaries

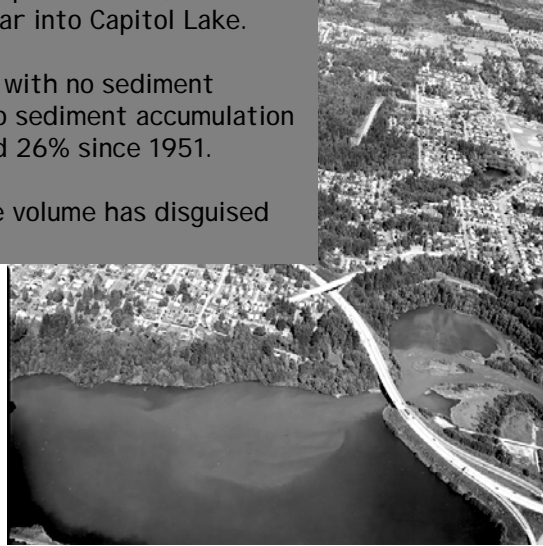


Sediment Transport

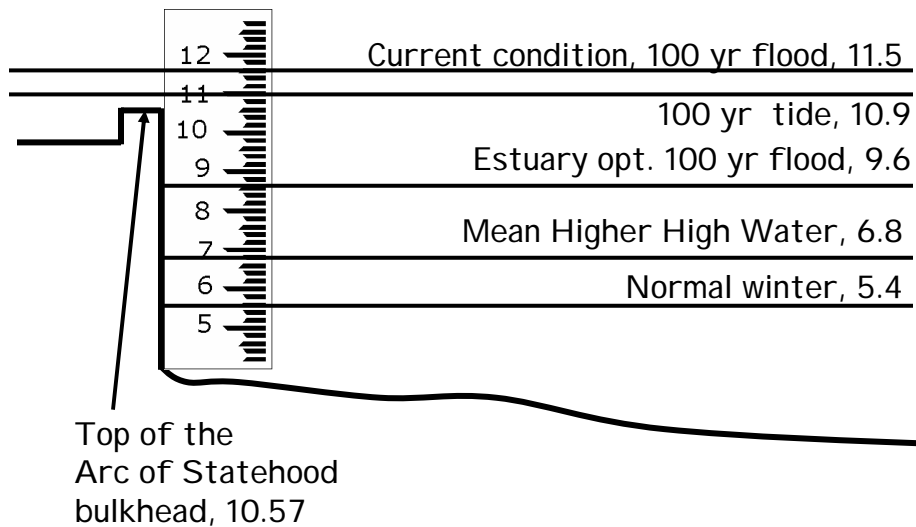
The Deschutes River transports 20-57,000 cubic yards of sediment per year into Capitol Lake.

Capitol lake is a reservoir with no sediment transport capacity. Due to sediment accumulation lake volume has decreased 26% since 1951.

Up until this time the lake volume has disguised this accumulation.



Flood Elevations





Aquatic Weeds

Capitol lake is a perfect place to grow weeds

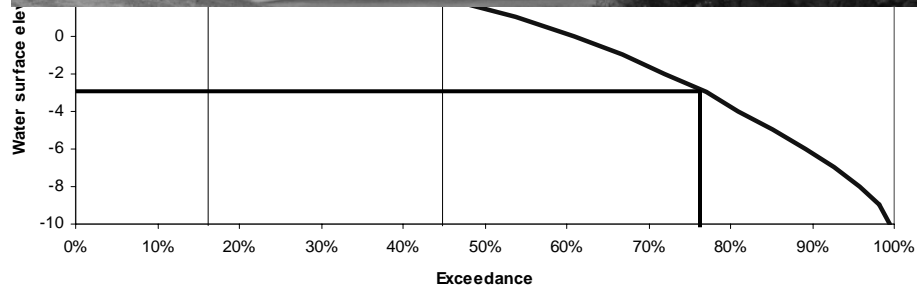
- Low summer turnover rate
- High nutrient load
- Sun and warm temperatures

Estuaries do not have common weed problems

Reflecting pool



Olympia Tides



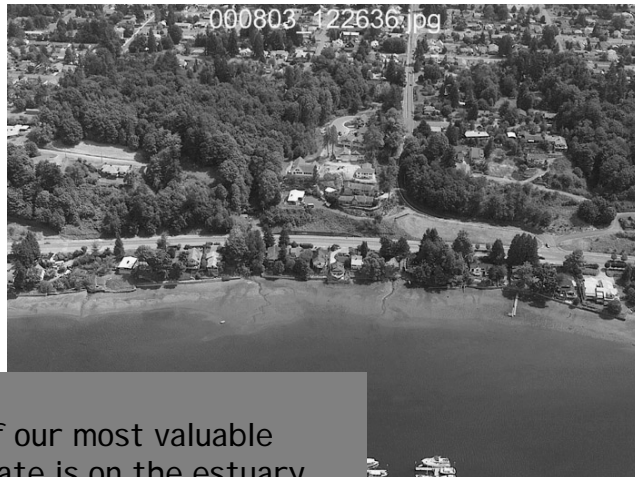
Odor issues



Olympia's shoreline is already estuary. It characterizes our city



Our most rapidly developing section of downtown is on the estuary.



Some of our most valuable real estate is on the estuary



Memories of odor issues may be associated with industrial use of the estuary, lack of sewage treatment, and the Little Hollywood slum.

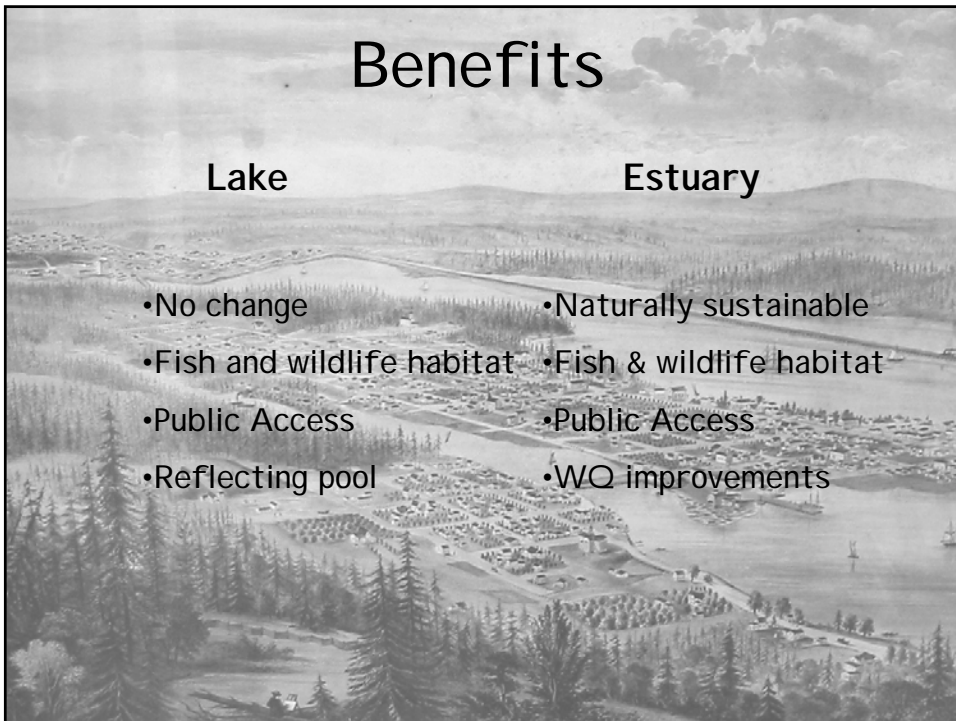
Benefits

Lake

- No change
- Fish and wildlife habitat
- Public Access
- Reflecting pool

Estuary

- Naturally sustainable
- Fish & wildlife habitat
- Public Access
- WQ improvements



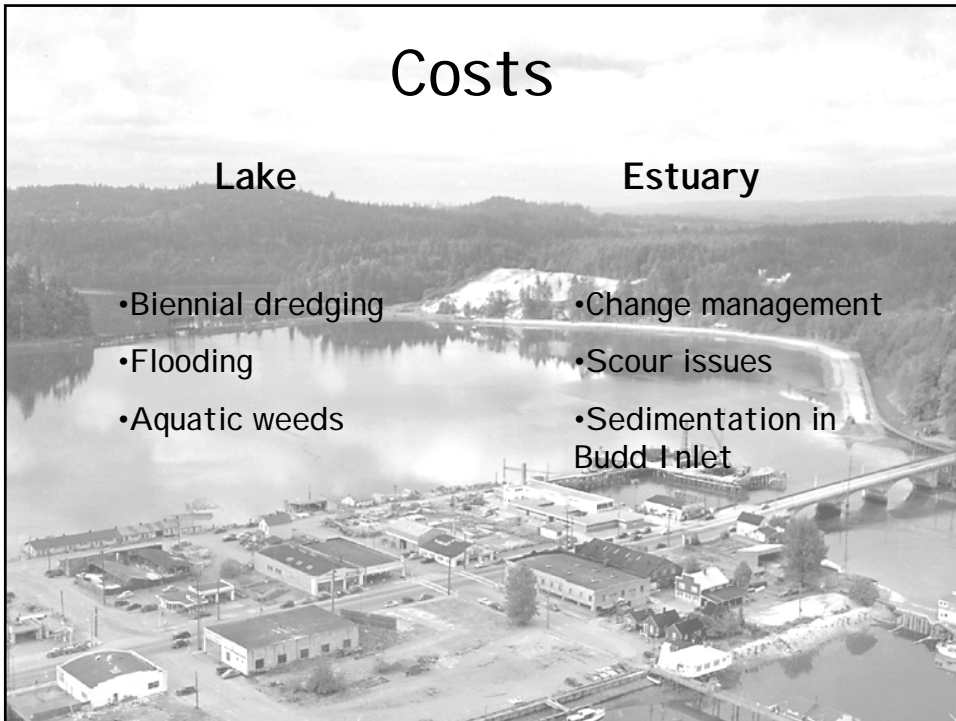
Costs

Lake

- Biennial dredging
- Flooding
- Aquatic weeds

Estuary

- Change management
- Scour issues
- Sedimentation in Budd Inlet



Feasibility Study

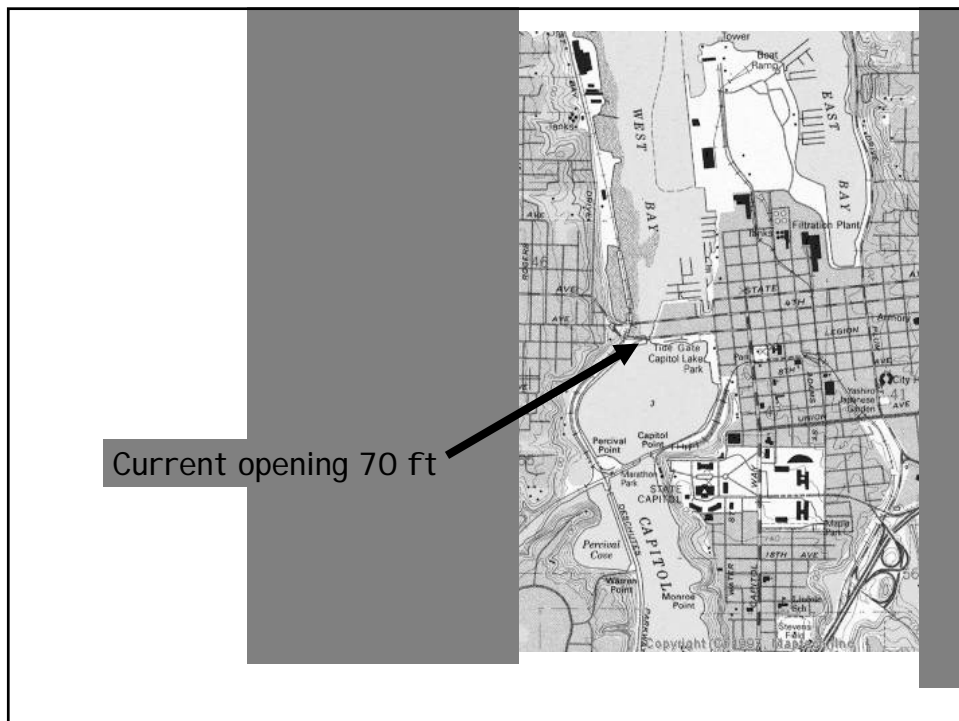
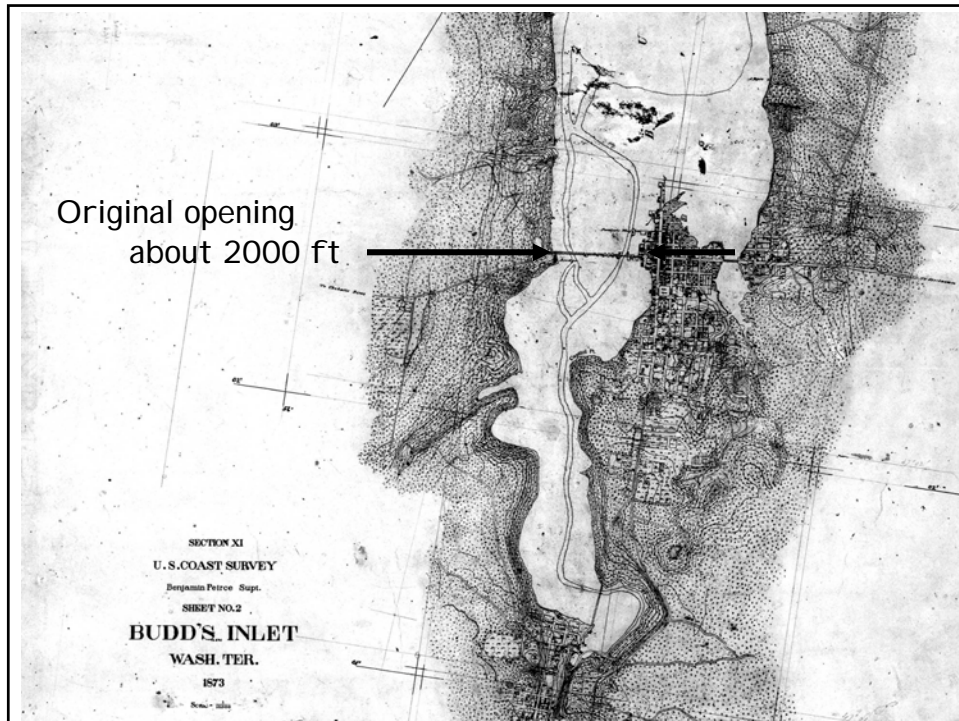
Can a properly functioning estuary be established in the lower Deschutes River?

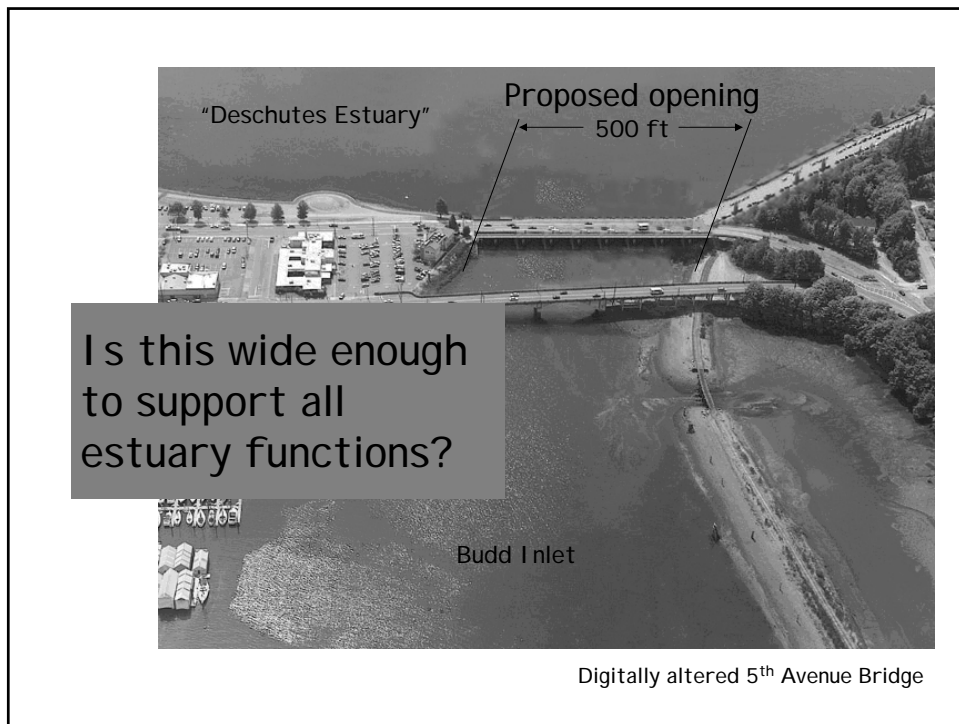
- What makes other regional estuaries work?



Kennedy Ck, Mason Co.

- Will river flow tidal action manage sediment ?





Capitol Lake/Deschutes Estuary Feasibility Study

Study elements:

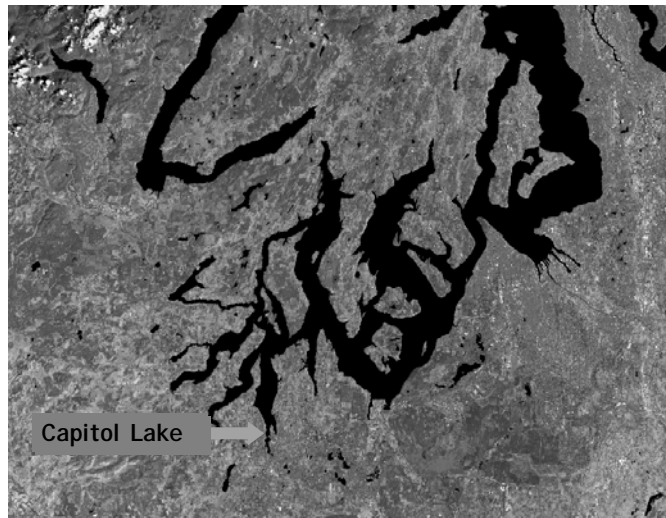
- *Data Gathering*
- *Hydraulic and Sediment Transport Analysis*
- *Biological Considerations*
- *Design Alternatives*
- *Net Benefit Analysis*

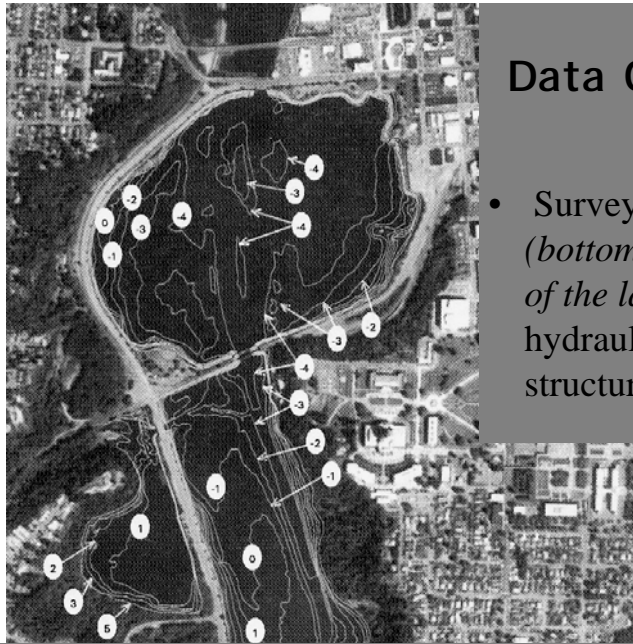
Data Gathering

- Examine neighboring natural estuaries to determine what makes them function.



South Sound Estuaries



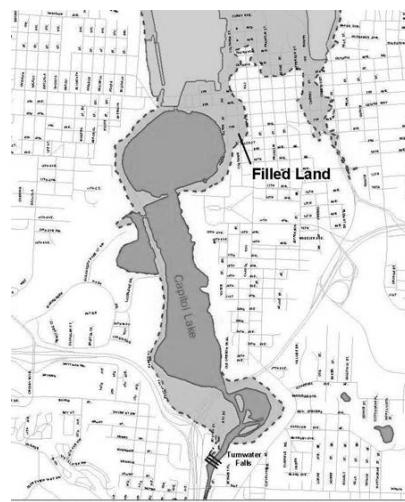


Data Gathering

- Survey bathymetry (*bottom topography of the lake*), and hydraulic control structures.

Hydraulic and Sediment Transport Analysis

With so much change in the area around Capitol lake, can a properly functioning estuary be restored in the Lower Deschutes?



Capitol Lake - Historic Shoreline & Filled Land



- The effects of constrictions and other shoreline modifications on circulation patterns can be determined by hydraulic analysis



Questions answered by sediment transport analysis:

- Will the proposed estuary transport delivered and currently stored sediment?
- Where will it end up?
- How will sediment scour and deposition affect and be affected by circulation patterns?



- Hydraulic analysis will also determine effects of high tides and Deschutes River flooding on infrastructure.



Biological Considerations

With the findings of the Hydraulics and Sediment Transport study, determine the biological responses.

- What type of estuary will form?
- Will it be self-sustaining and productive?
- How will variations in elevation or circulation pattern affect plant and animal communities?
- What will the estuary look like in the future?



Initial Estuary Design

- Remove the Capitol Lake dam and construct a new bridge for Deschutes Parkway and 5th Avenue.



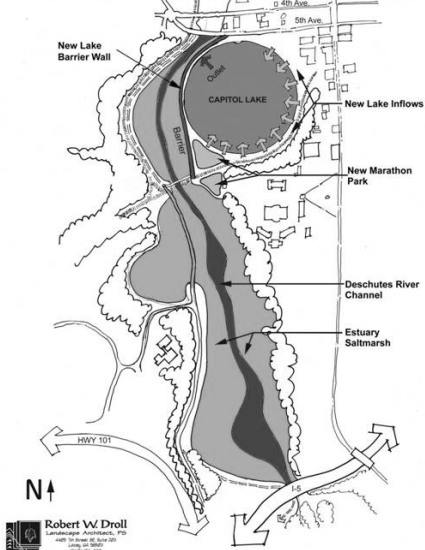
Other Design Options

Potentially remove or modify these existing features:



A Combination Lake/Estuary will also be considered

New Capitol Lake Concept Design



Net Benefit Analysis

- The community, engineering, and biological costs and benefits will be examined.
- Alternatives will be examined on a short and long term basis.
- A common currency will be developed so that comparisons can be made across the full range of values and alternatives.
- An important consideration for selecting a preferred alternative will be that the community trusts that the benefit-cost analysis was fair and equitable.